Rhodora

JOURNAL OF THE
NEW ENGLAND BOTANICAL CLUB

Vol. 61 November, 1959 No. 731

CONTRIBUTIONS TO THE FLORA OF NOVA SCOTIA
VII. DISTRIBUTION OF SOME AQUATIC AND PALUDIAL SPECIES

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Rather extensive floristic surveys have been undertaken in Nova Scotia during the past ten years as part of a series of ecological studies sponsored by the Nova Scotia Research Foundation under the direction of the author. Some of the discoveries made during this work have already been published (Erskine, D. S. 1951; Smith and Schofield 1952; Schofield and Smith 1953; Smith and J. S. Erskine 1954; Schofield 1955; Webster 1956; Smith and Schofield 1959).

Nova Scotia has probably had a longer and more intensive botanical exploration than any other province in Canada. Yet as the detailed exploration of the area proceeds, many of the supposed rarer plants have proven to be much more widespread in distribution than was previously thought. This has been particularly true in the case of the arctic-montane species, and of the coastal plain species in the eastward extension of their range. Another group which has proven to be quite widespread are certain of the smaller aquatic and paludial species which are characteristic of the marginal waters of ponds, lakes and streams, and of the swamps associated with these.

The arctic-montane species, and to some extent the coastal

plain species in the southeastern counties, are frequently very local in occurrence in habitats which are not widespread in the province. Some of the group of aquatic and paludial species listed in this paper are also apt to be local in distribution, as for instance *Lemna trisulca* L., *Ranunculus Gmelini* DC., var. *Hookeri* (D. Don) Benson, *Megalodonta Beckii* (Torr.) Greene, and *Alisma triviale* Pursh which are found in the less acid areas. However, others such as *Najas flexilis* (Willd.) Rostk. & Schmidt, *Subularia aquatica* L., *Elatine minima* (Nutt.) Fisch. & Mey., *Calla palustris* L., *Utricularia minor* L., *Littorella americana* Fern., and *Ceratophyllum demersum* L., are now found to be widespread. The previously poorly known distribution of these species is probably due to the inconspicuous nature of these plants, and to the obscure habitats in which they grow.

The annotated list below of these rarely collected plants includes most of the stations discovered since the publication of the Flora of Nova Scotia by Roland in 1947. The maps show these new stations as well as those included in the above publication.

Grateful acknowledgement is made to the Nova Scotia Research Foundation for financial support and to those persons who aided the author in various ways, particularly to the members of the various summer field parties who assisted in the collection of plants, and to Mr. J. S. Erskine and others for permission to publish various records. The collection numbers, unless otherwise designated, are those of the author and associated collectors.

Typha angustifolia L. This narrow-leafed cat-tail is local in occurrence. Roland (1947) cites it as being local around some of the small lakes south of Amherst, near the head of the tide. It has also been reported from near Cheticamp in Inverness County. Unsubstantiated reports exist for Beaverbank, Halifax County and near Windsor, Hants County. The following are recent collections which show a wider distribution near the coast, chiefly in more basic areas. Pictou County: roadside swale, Mount Thom, *3989*. Cumberland County: marsh north of Amherst, *Smith, Smith and Collins*, Sept. 5, 1948. Hants County: abundant along small brook, one mile south of Falmouth, *12511;* rare

and local in swamp near Mount Denson, *3993;* roadside ditch, Walton, *J. S. Erskine 51.113.* Kings County: gravel pit by Black River Lake, *J. S. Erskine 53.165.* Digby County: brackish swale beside Route 1 at Meteghan, *J. S. Erskine 54.922;* common in marsh behind beach, Beaver River, *J. S. Erskine 53.234.* Queens County: swale near Caledonia, *11523.* Lunenburg County: growing in large colony in swale near shore, Blandford, *8865;* very extensive colony in brackish swamp near Lower Blandford, *W. B. Schofield 2875.*

Najas flexilis (Willd.) Rostk. & Schmidt. The distribution of this species has been poorly known in the province and the species has been little collected. Fernald (1921) records it as not seen in Yarmouth, Shelburne, and Queens Counties. In recent years it has been found over a wider area (Smith and Schofield, 1952; Schofield, 1955). The present known distribution is shown in the map, Fig. 1. It is particularly common in Cape Breton and the northcentral counties of the mainland, and rarer in the southeastern and southwestern counties. While it is now known from Yarmouth and Queens counties, it is rare. It has not yet been collected in Shelburne County. Victoria County: abundant in marginal water of Lakes O'Law, *7024;* abundant in pond back of beach, Briton Cove, *13891 and 7957;* abundant in water of pond north of Briton Cove, *8091.* Inverness County: in four feet of water of lake, Friar's Head, *13837;* in water of pond at Grand Etang, *10294;* occasional in water of Lake Ainslie near Scottsville, *6995;* marginal water of Horton Lake, *13801;* rare in wrack of pond, West Mabou Harbour, *13332.* Cape Breton County: abundant in marginal water of Canoe Lake, *13069;* abundant in marginal water of Blackett's Lake, *12996;* in wrack and rooted in shallows of lake three miles south of Albert Bridge, *12946;* marginal water of lake west of New Boston, *12952;* in wrack, marginal shallows of McIsaac Lake, *12873.* Antigonish County: in pond near James River, *7043;* rare in wrack of Gaspereau Lake, *13240;* abundant and rooted in muck of Gillis Lake, *13135A.* Pictou County: common in shallows of lake south of Churchville, *12811.* Colchester County: abundant in marginal water of Earltown Lake, *11747;* frequent in Stewiacke River, Middle Stewiacke, *12702;* shallows of Nine Mile River at Elmsdale, *12671;* large colonies on mud bottom of Gay River, Gay River Village, *12673;* marginal water of Shortt's (Otterton) Lake, *12556.* Cumberland County: in ice pond, Tidnish Road near Amherst, *J. S. Erskine 55.730.* Hants County: muddy shallows of Comagun River, *J. S. and D. S. Erskine 55.486;* abundant in water of Lily Lake, *9117;* abundant in pond north of Summerville, *9075;* lake three miles south of Maitland, *9236.* Kings County: pond near station, Avonport, *J. S. Erskine 53.375.* Annapolis County: wrack of Millbury Lake, *13273.* Digby County: rare in wrack of lake, Midway Lake, *11859;* margin of small lake, east of Mistake Lake, *11975.* Queens County: marginal shallows of Charlotte Lake,

12444. Lunenburg County: shallow water at edge Hen Lake, New Canada, *17243;* rare in Blystner Lake, *12768*. Halifax County: locally abundant in marginal shallows of Barrett Lake, *12608;* in wrack of Briny Lake at Seabright, *12663;* abundant in river at Brandy Spring, *9300;* river water at Middle Musquodoboit, *9268*. Guysborough County: marginal water of Salmon River Lake, *13167;* occasional in wrack of lake at Lakedale, *13155;* rare in water of Pringle Lake near Goshen, *13190;* rare, water of Glenelg Lake, *9417*.

Scheuchzeria palustris L., var. **americana** Fern. Nichols (1918) lists this species as characteristically associated with the sphagnum mat of undrained swamps on the Cape Breton Plateau. Fernald (1922) notes its occurrence in quagmires of Shelburne County. It has also been reported from similar habitats in Kings, Queens, and Colchester Counties. Recent collections are as follows: Victoria County: bog ten miles west of Neil's Harbour, *3821;* rare in water of bog pools, at an elevation of 1400 feet on Ingonish Barrens, *4644*. Richmond County: very rare in quaking bog, Louisdale, *5064*. Digby County: a few plants on floating mat, Boar Back Lake, *J. S. Erskine 53.248*. Queens County: floating mat of small lake near Ponhook Lake, *J. S. Erskine 51.1513;* bog west of Caledonia, *12434*. Lunenburg County: bog one mile west of East River, *D. S. Erskine 846;* boggy margin of Shoal Cove Lake Brook, *W. B. Schofield 2778;* floating mat, Fox Point Lake, *J. S. Erskine 54.1600;* swale, Mill Cove Lake, *J. S. Erskine 52.1334*. Halifax County: abundant in bog, Head of Chezzetcook, *9319;* abundant, boggy lake edge, West Quoddy, *9561*. Guysborough County: frequent on floating mat of lake west of Marie Joseph, *9508*.

Alisma triviale Pursh. Rather common from Annapolis County to Pictou and Cumberland Counties (Roland, 1947), this plant of muddy ditches, pond and stream edges is now shown to extend into Cape Breton. Inverness County: common at edge of gypsum sink hole, Hillsborough, *4823*. Antigonish County: stream in marsh, Monastery, *656;* abundant at pond edge, Bayfield, *6932*. Pictou County: river gravel at River John, *11694;* abundant in swale west of Pictou, *11737;* edge of East River near Sunny Brae, *J. S. Erskine 55.1227*. Hants County: shallow pond above fish hatcheries, Martock, *D. S. Erskine 50;* pond edge, Newport, *J. S. Erskine 51.361;* shallow pond, Three Mile Plains, *J. S. and D. S. Erskine 12*. Annapolis County: in water of stream, Middleton, *J. S. and D. S. Erskine 202;* wet margin of Croskill Lake, *W. B. Schofield and D. H. Webster 4274*, swale below Route 1, Bloody Creek, *J. S. Erskine 54.1467*.

Sagittaria graminea Michx. Well known from the southwestern counties, Roland (1947), this plant has been reported by Schofield (1955) from four locations in Cumberland County. It is also now known to be relatively common in the central and eastern counties,

and in Cape Breton. Richmond County: muddy lake shore, Loch Lomand, *760;* rare on rocky shores of Grand Lake, Isle Madame, *5083;* edge of Ferguson Lake, *J. S. Erskine 51.1087.* Cape Breton County: common in muck at edge of Blacketts Lake, *15049;* rare, edge of Pottles Lake, North Sydney, *13033.* Antigonish County: submerged in marginal water of lake, St. Joseph, *13706.* Pictou County: lakeside, Eden Lake, *1231;* common on lake beach south of Churchville, *12817.* Hants County: sandy margin of Lewis Lake, *12486;* lake edge in water, Mockingigh Lake, *8950.* Annapolis County: rare on muddy margin of Sandy Lake, *W. B. Schofield 2920.* Queens County: shallows of ox-bow pond below Mill Village, *J. S. Erskine 55.375;* marshy, gravelly shore, Medway River above Charleston, *Dore and Gorham 44.954;* marginal mud of Charlotte Lake, *12450.* Lunenburg County: submerged in marginal water of LaHave River, *12732;* shallows, edge of Wentzels Lake, *6884;* Maplewood, *Ord, Watts and Bridgeford* July 8, 1949; one plant in shallows, Fancy Lake, *J. S. Erskine 53.350;* beach of Big Mushamush Lake, *J. S. Erskine 52.1117.* Halifax County: lake edge west of Lake Charlotte, *J. S. Erskine 51.416;* muddy, gravelly margin of lake, Banook Lake, Dartmouth, *Dore, Judd and Gorham 45.1103.* Guysborough County: occasional, gravel beach of Two Mile Lake, *9391;* occasional in shallows of lake, Half Island Cove, *6781,* sterile plants in one foot of water in Pringle Lake, *13194.*

Sagittaria cuneata Sheldon. Erskine (1951) shows the extension of this species into Inverness County, Cape Breton, where it appears to be the common species. The following collections substantiate this statement and show its range to be confined mainly to the northeastern counties of the province. Victoria County: in one foot of water, Washabuck Bridge, *13943;* abundant in boggy runnels of lake, St. Colomba, *9763;* common in shallows of alkaline pond, South Haven, *8173;* muddy border of pond South Gut, St. Ann, *894.* Inverness County: in water of lake, Friar's Head, *13834;* edge of lagoon, River Denys, *9689;* abundant in mucky edge of brook, East Lake Ainslie *6993;* abundant in water of pond, Mabou Harbour, *4898.* Antigonish County; pond near beach, Cape Jack, *16787;* abundant in one foot of water, pond edge, St. Joseph, *13220.* Pictou County: beach of River, East St. Mary's, *J. S. Erskine 55.1155.* Colchester County: in marsh near brook, Lower Truro, *Macfadden 246.* Hants County: Herbert Brook, Brooklyn, *J. S. Erskine 52.782;* Lebreau Creek, crossing Chester Road near Windsor, *Bell, Erskine and Gorham,* Aug. 3, 1948. Kings County: Habitant River above Canning, *J. S. and D. S. Erskine,* Aug. 31, 1949.

Rhynchospora capitellata (Michx.) Vahl. Previously known to occur frequently on lake shores, savannahs, and peaty openings in the southwestern counties, and scattered eastward to Annapolis and Halifax Counties (Roland, 1947) and again in Cumberland County (Schofield, 1955), this species has now been collected in all the counties of the

mainland portion of the province except Kings and Colchester. It is most luxurious and abundant in the western counties, more scattered in the east. Pictou County: locally abundant at edge of West Branch Lake, *12851*. Hants County: margin of Noel Lake, *12462;* stony beach, Cameron Lake, *52.596;* rocky pasture, West Brooklyn, *J. S. Erskine 1430* Annapolis County: roadside near Young Lake, *13277;* outlet of Millbury Lake, North Mountain, *J. S. Erskine 54.1513;* abundant in damp field, Upper Clarence, *W. B. Schofield 2938*. Shelburne County: abundant in ditch, Nine Mile Road between Sable River and Jordan Falls, *17117*, woods road near Round Bay, *W. B. Schofield 5510;* river bank, Ohio, *12136;* woods road, Woods Harbour, *12213*. Queens County: abundant on beach at Ten Mile Lake, Graywood, *17301;* mat at edge of pond, Ponhook Lake, *J. S. Erskine 51.1517;* beach of Sand Lake, Shelburne River, *12287*, common on lake beach, Hibernia, *13317*. Lunenburg County: common on lake beach, Ashland Lake, *17021;* shores of Church Lake, *17180;* margin of LaHave River, New Germany, *12379*. Halifax County: beach of Lake Charlotte, *J. S. Erskine 55.1089*. Guysborough County: gravel bank of river, two miles north of Sherbrooke, *J. S. Erskine 55.1055;* locally abundant, beach of Glenelg Lake, *9409*, on cobbly flood beach of St. Mary's River near Caledonia, *J. S. Erskine 51.786*.

Rhynchospora fusca (L.) Ait. f. Previously thought to be rare or absent from the central and eastern counties, the following collections represent additional stations for this area, and for Annapolis and Queens Counties where few have been reported. Victoria County: abundant on salt meadow, one mile south of Black Brook Mouth, *6564;* swale of lake at an elevation of 1300 feet, ten miles north of Oregon, *J. S. Erskine 56.270;* occasional in sphagnum bog north of Briton Cove, *8086;* at pond edge, Indian Brook, *5633;* bog at an elevation of 1100 feet, Cape Smoky, *922*. Inverness County: shore of Horton Lake, *13186;* bog at an elevation of 1300 feet, head of MacGregor Brook, *1127*. Richmond County: bog at edge of Cranberry Lake, *13108;* very abundant on bog near Point Michaud, *10103;* rare in bog at West L'Ardois, *5142*. Cape Breton County: colonies in brackish swamp near pond, Eastern Harbour, Scatari Island, *8567;* quaking lake edge at Frenchvale, *15071;* beach of lake near New Boston, *12958;* abundant on floating mat at edge of Black Brook Lake, Morrison Road, *12968;* occasional in floating mat, edge of lake near McAdam Lake, *5486*. Pictou County: locally abundant at edge of West Branch Lake, *12852*. Cumberland County: beach of Mellady Lake near Parrsboro, *J. S. Erskine 55.657*. Hants County: grassy lake edge, Noel Lake, *9136 and J. S. and D. S. Erskine 55.494;* marshy edge of Cameron Lake, *J. S. Erskine 52.607*. Annapolis County: abundant in bog near Lequille River, *11868;* damp margin of Sandy Lake, *13287;* in mat at lake edge, MacKenzie Lake, *W. B. Schofield and D. H. Webster 4314*. Queens County:

beach of Ponhook Lake, *J. F. Donly and J. S. Erskine 55.446*. Halifax County: beach of Lake Charlotte, *J. S. Erskine 55.1083;* abundant in floating mat of lake near Upper Musquodoboit on Sheet Harbour Road, *9252;* abundant on shore of Briny Lake, Seabright, *12656*. Guysborough County: boggy barren, Marie Joseph, *J. S. Erskine 51.474*.

Calla palustris L. The Water Arum or Wild Calla occurs locally in the province. Roland (1947) notes that it is rare in the western counties and rare or absent in Cape Breton. Smith and Schofield (1952) noted a somewhat wider distribution; particularly in Cape Breton Island, reporting it from Cape Breton, Victoria, and Inverness Counties. This plant of cold bogs and swampy pond, lake and stream edges is usually localized in small areas and can easily escape detection. The largest station seen was that near Sand River, Cumberland County in a burnt over bog (Smith, Collins, Bruce, Sampson, and Bent 3147) where the plant had spread over an area of several square rods. The present known distribution (Fig. 2) shows it to be most common in the northern part of the province and rare or absent from the south and southwestern counties. The following are new collections, mainly from the eastern region. Victoria County: rare in alder thicket at pond edge, West Tarbot, *14920*. Inverness County: abundant in boggy pond edge near Orangedale, *7524;* alder thickets at river edge, River Denys, *7582;* bog at pond edge, Eden, *7547;* margin of streamlet, Mason Point, Lake Ainslie, *13779;* abundant at pond edge, West Bay Station, *8790*. Cape Breton County: edge of lake north of Gabarus, *13077;* abundant and forming a mat in alder thicket, Blackett's Lake, *15041;* Caribou Marsh near Mira, *G. E. Warren* July 25, 1948. Antigonish County: boggy swamp, Keppoch, near James River, *2902;* swampy woodland near James River, *10630*. Annapolis County: abundant in wet quaking bog, West Dalhousie, *5550*. Shelburne County: locally abundant in swale near diversion dam, Jordan Lake, *18948*. Queens County: wet grassy bog edge, Caledonia, *Nancy Bleakney* June 10, 1953; common at lake edge, Kempt, *17521*. Lunenburg County: quaking bog near Mahone Bay, *W. B. Schofield and D. H. Webster 4600;* locally abundant at bog, South Maplewood, *17372*. Guysborough County: bog, Marie Joseph, *588*.

Lemna trisulca L. This small submerged duckweed has been known to occur in springs, brooks, and pools of the Annapolis Valley and Cumberland County (Roland, 1947) and has been reported by Erskine (1951) from Inverness and Victoria Counties. These following additional stations show a somewhat wider distribution and greater abundance than was previously known. Victoria County: common in shallows of lake, north of New Campbellton, *D. H. Webster 561;* very abundant in alkaline pond near Baddeck Forks, *8185*. Inverness County: occasional in pond near mouth of River Denys, *7559;* abundant in pond water, two miles east of Melford, *8791;* very abundant in pond,

Mabou Harbour, *4880*. Antigonish County: in water of river near St. Joseph, *10594;* in lake at St. Joseph *13225*, abundant in pond east of James River, *7675*.

Ceratophyllum demersum L. Reported by Roland (1947) as rare, and known from one location; Canard River, Kings County above the tide level. Schofield (1955) notes its occurrence at three locations in Cumberland County. The map, (Fig. 3) gives the known distribution, based mainly upon the following collections: Cape Breton County: abundant at *Chamaedaphne* edge of small lake near Albert Bridge, Mira, *10167*. Antigonish County: in water near pond edge, St. Joseph, *13223; and 13709*. Pictou County: common in wrack of Black River Lake, East River St. Mary's, *13348*. Colchester County: mucky bottom of ox-bow pond, Stewiacke River at Landor, *12691*. Cumberland County: in water of Halfway River, Newville, *J. S. Erskine 55.626*. Kings County: abundant in pond near railway, Coldbrook, *W. B. Schofield 4452;* marginal water of Simpson Lake, *12803;* growing in marsh above Kentville, *Roland, Lewis and Dore*, June 22, 1942; dense growth in quiet pond near Cornwallis River, Kentville, *D. H. Webster 145;* in back water of Gaspereau River near Gaspereau, *D. and R. Erskine 967*. Queens County: in wrack of lake at Hibernia, *13307*. Lunenburg County: fragments in wrack, Oakland Lake, *12770*. Guysborough County: abundant in water of lily pond near Two Mile Lake, *9396;* water of Glenelg Lakes, *9448*.

Nuphar microphyllum (Pers.) Fern. This pond lily has been known from relatively few locations in the province. The following collections add to our knowledge of its distribution. Inverness County: abundant in water at mouth of Hay's River, West Lake Ainslie, *6958*. Antigonish County: in pond of meadow of South River near St. Andrews, *3976*. Pictou County: in millpond near Pictou, *Howe and Lang 610*. Colchester County: in water of south branch, Stewiacke River, *J. S. Erskine 55.624*. Hants County: in water of Mantletree Lake, *S. Bleakney*, June 26, 1950; in water of Lily Lake, Burlington, *Gorham and Roland*, July 16, 1946. Kings County: ox-bow pond of Cornwallis River at Berwick, *J. S. and D. S. Erskine 338;* in river at Aylesford, *J. S. Erskine 52.075*. Digby County: brook by road to New France, *J. S. Erskine 55.237*. Queens County: outlet of Frozen Ocean Lake, *S. Bleakney*, July 8, 1950; inlet to Telfer Lake, *Livingstone and Cameron*, July 1, 1949. Halifax County: in Shubenacadie River between Shubenacadie and Middle Musquodoboit, *J. S. Erskine 51.744*. Guysborough County: pond in meadow, Glenelg, *521*.

Ranunculus Gmelini DC., var. **Hookeri** (D. Don) Benson. While the overall range of this plant has been known to extend from Kings County east to Cape Breton, few actual stations have been recorded. The plant seems to be abundant where found, in slow flowing streams and ditches, shallow pools, and ponds in the more alkaline areas of

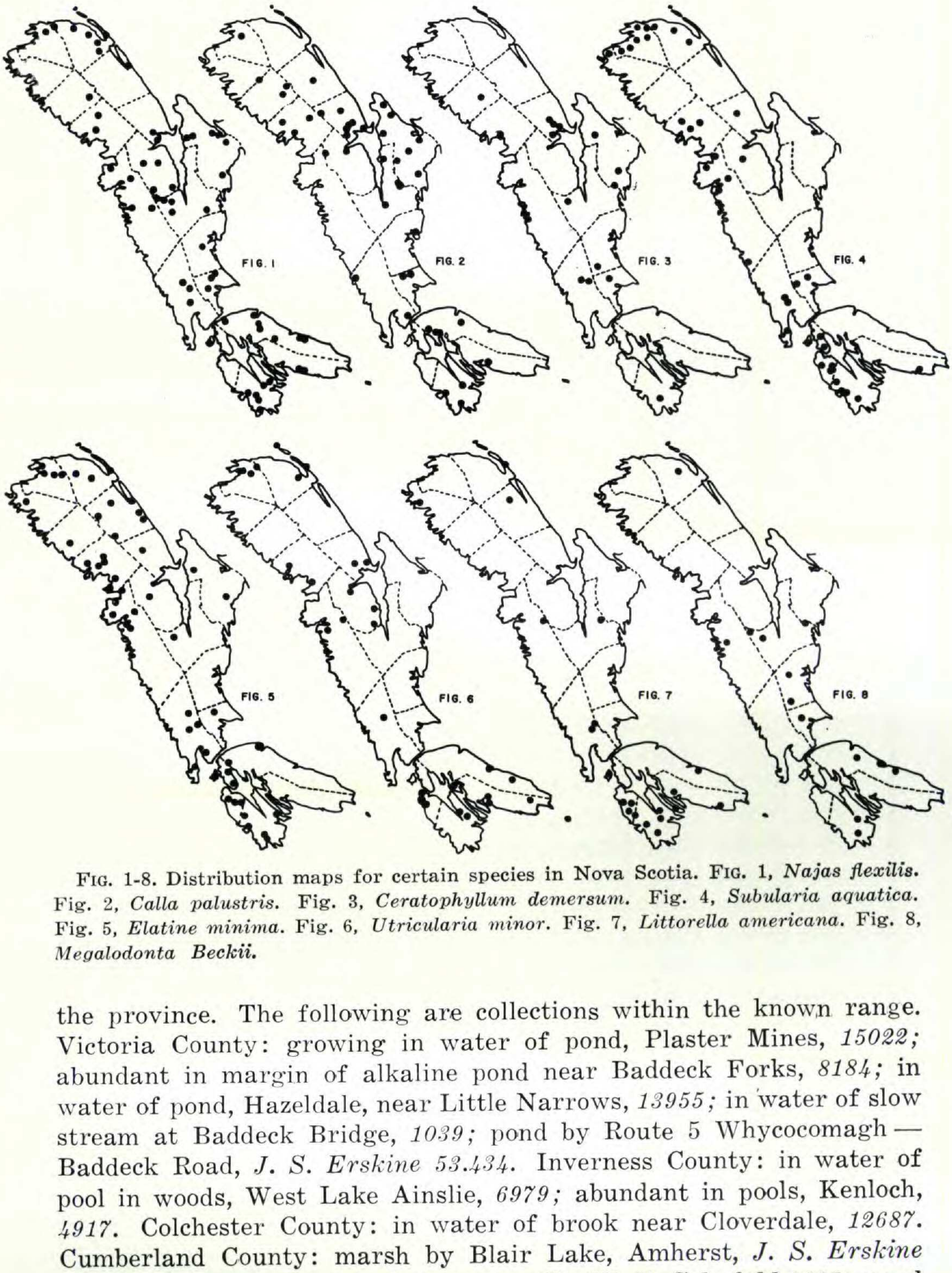

FIG. 1-8. Distribution maps for certain species in Nova Scotia. FIG. 1, *Najas flexilis.* Fig. 2, *Calla palustris.* Fig. 3, *Ceratophyllum demersum.* Fig. 4, *Subularia aquatica.* Fig. 5, *Elatine minima.* Fig. 6, *Utricularia minor.* Fig. 7, *Littorella americana.* Fig. 8, *Megalodonta Beckii.*

the province. The following are collections within the known range. Victoria County: growing in water of pond, Plaster Mines, *15022;* abundant in margin of alkaline pond near Baddeck Forks, *8184;* in water of pond, Hazeldale, near Little Narrows, *13955;* in water of slow stream at Baddeck Bridge, *1039;* pond by Route 5 Whycocomagh — Baddeck Road, *J. S. Erskine 53.434.* Inverness County: in water of pool in woods, West Lake Ainslie, *6979;* abundant in pools, Kenloch, *4917.* Colchester County: in water of brook near Cloverdale, *12687.* Cumberland County: marsh by Blair Lake, Amherst, *J. S. Erskine 55.732;* in water of pond at Truemanville, *W. B. Schofield 4196;* pond edge, Point Amherst, *J. S. Erskine 52.923.* Hants County: very abundant in pond near Brooklyn, *15615;* gypsum pond east of railway

crossing south of Pemberton Station, *J. S. Erskine 52.154.* Halifax County: pond below gypsum cliffs, Upper Musquodoboit, *J. S. Erskine 53.138.*

Subularia aquatica L. This small plant usually occurs immersed and scattered on the gravelly bottoms of lakes and at the margins of slow streams. Occasionally it has been found in great abundance, forming mats on the muddy bottoms of lakes. Such stations are those south of Albert Bridge, Cape Breton County, edge of Black River Lake, Richmond County, and the edge of Salmon River Lake, Guysborough County. It appears to be most common in the extreme southeast and southwest portions of the province (Fig. 4) with scattered stations elsewhere. No stations have as yet been reported from Cumberland, Colchester, and Pictou Counties in the northcentral region, or from Queens, Shelburne, and Annapolis Counties in the south and west. The following represent unreported stations. Richmond County: marginal water, east side of Loch Lomand, *10151;* abundant in shallows of Ferguson Lake, *10074;* west side Loch Lomand in sandy shallows, *5055;* very rare on gravelly beach, Grand Lake, Isle Madame, *5069;* rare in marginal waters of Cranberry Lake, *13109;* very common in extensive mats, marginal water of Black River Lake, *13094.* Cape Breton County: common in water, margin of Gabarus Lake, *5106;* abundant in muck at edge of lake south of Albert Bridge, *12937;* abundant in marginal water of Giant Lake, *13056;* occasional in water of lake eight miles north of Gabarus, *13084.* Antigonish County: occasional in marginal water of Gaspereau Lake, *13242.* Hants County: in six inches of water at edge of Cameron Lake, *9927.* Kings County: occasional, submerged in shallows of Lake George, *W. B. Schofield and D. H. Webster 2989;* shallows of Summit Lake, *D. S. Erskine 53.1003.* Lunenburg County: shallows of Big Mushamush Lake, Lower Northfield, *17192;* submerged in marginal shallows of Blystner Lake, *12766.* Halifax County: submerged in marginal water of Briny Lake, Seabright, *12661;* marginal shallows of Barrett Lake, *12606;* occasional in lake water, West Quoddy, *9542;* Sawlors Lake, *Hubbards, Bell, Gorham and Mason,* Aug. 10, 1949. Guysborough County: marginal water of Hurley Lake, *13175;* abundant in muck at edge of Salmon River Lake, *13162;* rare in marginal shallows of pond south of Half Island Cove, *6778.*

Elatine minima (Nutt.) Fisch. & Mey. Fernald (1921, 1922) reported this plant from the sandy and muddy tidal flats of the Tusket River, Yarmouth County, and in shallow water at the sandy margin of Harper's Lake, Shelburne County, and also from stations in Annapolis, Lunenburg and Hants Counties. Roland (1947) records it as common in Digby, Yarmouth and Shelburne Counties, and scattered east to Lunenburg and Hants Counties. Smith and Schofield (1952) point out its occurrence in Cape Breton, and Schofield (1955) in

Cumberland County. It is now shown to be of widespread occurence, found whenever a suitable habitat is present. The only area in which it has not been found is the northern plateau in Cape Breton. The locations shown on the map (Fig. 5) are based upon published records and the following collections. Inverness County: occasional, edge of MacIntyre Lake, *13090*. Richmond County: shallows of Ferguson Lake, *10077;* water of Barren Lake, *10161;* edge of Cranberry Lake, *13111;* occasional, marginal water of Potties Lake, Isle Madame, *13046;* in muck at edge of Black River Lake, *13095*. Cape Breton County: abundant in muck, edge of lake, three miles south of Albert Bridge, *12939;* occasional, shallows of lake, three miles west of New Boston, *12950;* rare in marginal shallows of Scotch Lake, *13028;* occasional in marginal shallows of Giant Lake, *13057*. Antigonish County: rare in water at lake edge, west of Havre Boucher, *6928;* abundant in dense clumps, Gaspereau Lake, *13241*. Colchester County: marginal shallows of Shortt's (Otterton) Lake, *12566*. Hants County: abundant in one foot of water, edge of Cameron Lake, *9928*. Kings County: sandy shallows of Aylesford Lake, *J. S. Erskine 55.462;* submerged in marginal shallows of Lake George, *W. B. Schofield 2988*. Annapolis County: shallow lake edge, Lake Pleasant, *6835;* sandy bottom of Milbury Lake, *13271;* marginal shallows of Liverpool Head Lake, *11881;* on mud of shallows of Croskill Lake, *W. B. Schofield and D. H. Webster 4275;* edge of lake one mile north of county line, Annapolis — Liverpool Road, *11886 and 11894;* very abundant on wet mud and in shallows of Sandy Lake, *W. B. Schofield and D. H. Webster 2145*. Digby County: common in marginal shallows, Little Meteghan Lake, *7103;* submerged among rocks of lake shore Midway Lake, *11856;* abundant on wet sandy shore, Wentworth Lake, *7080*. Yarmouth County: shallows of backwater below power dam, Tusket Lakes, *J. S. Erskine 51.1435;* abundant, wet shore of lake at Carleton, *7060;* abundant on wet mud and in shallows of Parr Lake, *7069;* submerged in marginal shallows, Lake Milo, *W. B. Schofield 2825*. Queens County: marginal shallows of Charlotte Lake, *12431*. Lunenburg County: occasional in shallows of Wentzels Lake, *6885;* very abundant with *Isoetes* in marginal water of pond, back of beach, Blanford Beach, *8872;* abundant in marginal water of Lather Lake, *8921;* common in marginal water of lake behind sand beach, Bayswater, *W. B. Schofield 5533;* submerged in marginal shallows of Blystner Lake, *12765;* marginal water of Oakland Lake, *12779*. Halifax County: in mucky shore of Briny Lake, Seabright, *12660;* marginal water of Barrett Lake, *12605;* rare at lake edge near Preston, *9381;* abundant in wet mud among gravel of now exposed lake margin, Banook Lake, Dartmouth, *Dore, Judd, and Gorham 45.1100;* Sawlors Lake, *Hubbards, Bell, Gorham and Mason,* Aug. 10, 1949; Hatchet Lake, Prospect Road near Halifax, *Dore 45.1149*. Guysborough County: marginal water of Hurley Lake, *13174;* marginal water of Pringle

Lake near Goshen, *13193;* marginal water of Salmon River Lake, *13163;* marginal water of lake at Lakedale, *12152;* abundant in shallows at lake edge south of Half Island Cove, *6777;* abundant on lake bottom in one foot of water, Lake Mannassette, *6807;* rare in marginal water of Glenelg Lakes, *9444.*

Hippuris vulgaris L. While Roland (1947) shows stations for this species in the central, and in the extreme east and western counties only, his statement that it is probably widely scattered seems to be substantiated by the following collections. Victoria County: in muddy stream edge, Cheticamp River near Cheticamp Lake, *3341;* in water of pond behind beach, Black Brook, *3427;* edge of pond by road south of Neil's Harbour, *J. S. Erskine 52.477.* Inverness County: rare in brackish pond, Judique, *5012.* Richmond County: boggy pond, Point Michaud, *794;* rare in wet swamp, Arichat, Isle Madame, *5096.* Cape Breton County: very abundant in ponds behind beach, Eastern Harbour, Scatari Island, *8396;* pond edge, Louisbourg, *2835;* abundant in pool behind beach, Main-a-Dieu, *5202;* in pond behind beach, Northwest Cove, Scatari Island, *5350.* Cumberland County: submerged in water of Diligent River, *Wharton 5557;* shallows of pond, Amherst Point, *J. S. Erskine 52.909.* Hants County: in backwater of Cogmagun River, *J. S. and D. S. Erskine 55.512.* Digby County: edge of pond, Little Pond, Brier Island, *Roland and Smith 250,* and behind barrier beach, north of lighthouse, *Roland and Smith 122.* Yarmouth County: in pond water near sea, LaRanche, *Bruce and MacFarlane,* June 25, 1951; border of stream, near Upper Chegoggin, *D. S. Erskine 953;* shallow water of brackish pond Cape Forchu, *J. S. Erskine 50.081.* Halifax County: in brook at Port Dufferin, *J. S. Erskine 55.1091.* Guysborough County: pool behind beach east of Larry River, *J. S. Erskine 51.655.*

The submerged forma **fluviatilis** (Hoffm.) Crosson & Germain is represented by the following collections. Antigonish County: abundant in Loch Katrine, *7628.* Cumberland County: in water of Parrsboro River at Cross Roads, *W. B. Schofield 3546.* Yarmouth County: floating in stream near Upper Chegoggin, *D. S. Erskine 953.*

Lysimachia thyrsiflora L. Roland (1947) gives the distribution of this plant as common in marshes about Truro and scattered east to Pictou and northwards in Cumberland County. As the following collections indicate, it extends to the east into Cape Breton. Victoria County: swamp, Bay St. Lawrence, *11037 and 6471;* swamp near pond, Cape Dauphin, *11004;* occasional in swampy border of alkaline pond near Baddeck Forks, *8178;* marsh at edge of brook, head of Baddeck Bay, *8237.* Inverness County: abundant in sedge mat, pond edge, Eden, near Orangedale, *7545;* abundant in mucky swamp at river edge, River Denys, *7583;* second bridge, Margaree, *M. V. Roscoe,* July 21, 1939; swamp, Cheticamp, *3635.* Cape Breton County: edge of alkaline pond,

South Side Bouladerie, *8262*. Antigonish County: shaded swamp near James River, *10612*.

Limosella subulata Ives. The presence of this species has been reported by Macoun (1899), St. John (1921), and Erskine (1954) on Sable Island where it grows on brackish beaches and sand flats near Wallace Lake. Roland (1947) records the species as being scattered along the coast of Yarmouth and Shelburne Counties, and about the Northumberland Strait to Cape Breton. Recent collections show its presence on both the south coast of the mainland and on Cape Breton Island. Inverness County: muddy shore behind beach at Margaree Harbour, *Roland and Adams 2242*. Richmond County: abundant on low area by pond, Point Michaud, *5136*. Cape Breton County: gravel shore of Lake Mira near Albert Bridge, *10174;* muddy edge of pond behind barrier beach, Main-a-Dieu, *2850*. Cumberland County: mud at margin of River Philip at Oxford, *W. B. Schofield 5409*. Queens County: marsh by estuary, Port Medway, *Donly and Erskine 55.391*. Halifax County: tidal edge of Eastern Passage, *L. S. Brown*, Sept. 27, 1948, and *J. S. Erskine*, July 13, 1949.

Utricularia minor L. The distribution of *Utricularia minor* is noted by Roland (1947) as being scattered, probably throughout the province, but the known distribution as shown by him indicates collections from the western half of the province only. Recent collections show that Roland's supposition was correct. The distribution map (Fig. 6) is based upon Roland (1947) and the following collections: Victoria County: pond edge, West Tarbot, *14938;* common in pond, Middle Aspy River, *5607;* bog pool near mouth of Indian Brook, *8110;* occasional, water of lake, St. Colomba, *9756*. Inverness County: on mud in bog pool, French Mountain, *3610;* edge of meadow pond, Margaree, *10306*. Richmond County: occasional in shallow pools, Graceville, *5159;* bog pool and on muck, west of Grand River, *10102;* bog hole, L'Ardoise, J. S. *Erskine 51.1080*. Cape Breton County: boggy margin of lake at Frenchvale, *15097;* abundant in water of lake, one mile north of McAdam Lake, *5493*. Hants County: in water of Noel Lake, *9176;* in water of pond near St. Croix, *9936;* lake three miles south of Maitland, *9237*. Kings County: in quaking muck amongst *Typha*, roadside pond near Kentville, *D. H. Webster 144*. Digby County: in water of slow flowing stream, south of Plympton Station, *14581;* very abundant in bog pond near Southwest Light, Brier Island, *Smith and Roland 89*. Yarmouth County: Deerfield Lake, *Perry and Allen*, July 21, 1912. Lunenburg County: marginal muck at edge of Henneberry Lake, *W. B. Schofield 5526;* wet quaking margin of pools near Hebbville, *W. B. Schofield 2840*. Halifax County: on muck of lake near Preston, *9363*. Guysborough County: in two feet of water, Glenelg Lakes, *9449*.

Littorella americana Fern. The first collection of this plant in Nova Scotia was made by Mrs. Britton on the shores of Shubenacadie Grand

Lake, Halifax County in 1879 (A. Gray, 1880). For many years this remained the only known station, and from it collections were repeatedly made (Brown in 1937, Roland 1937, Dore 1945, Smith et al 1952). More recently Smith and Schofield (1952) have reported the species from three stations in Cape Breton Island, and Schofield (1955) from one in Colchester County. Some twenty stations are now established. The greatest concentration is in southern Cape Breton Island with scattered stations on the mainland. The general habitat is the gravelly or sandy bottom of lakes in sheltered locations. Usually the plants are covered with from three to eighteen inches of water, but occasionally extend deeper into the lakes. In only two cases were plants found above water level at the time of collection. About one half of the collections were sterile, and flowering and fruiting specimens were found in both an exposed and immersed condition. Flowering times vary from year to year and probably also with depth of water. Flowering material has been collected from July 19 to September 10, and fruiting material as early as August 20. The plant is often abundant locally, forming mats with the basal rosettes of *Lobelia Dortmanna*, *Eriocaulon septangulare*, and sometimes *Isoetes* spp. It now seems probable that any pond or lake in the province with sheltered, gravelly bottomed lagoons will harbor *Littorella*. No doubt the inconspicuous nature of the plant and its habitat explain why its wider distribution has remained unknown. The following are unreported stations. Victoria County: very abundant in marginal water of Salem Lake, Boularderie Island, *8259;* occasional in shallows of Warren Lake, *16917;* common in marginal shallows of Lewis Lake, *16726*. Inverness County: locally abundant in shallow of pond near Grant Etang, *10274*. Richmond County: common in lake northwest of Framboise, *13055;* very abundant in shallows of Potties Lake, Isle Madame, *13041*. Cape Breton County: sandy shallows of Gillis Lake, *15059;* abundant in marginal water of Blacketts Lake, *12994;* abundant in marginal water of Giant Lake, *13064;* rare in shallows of Canoe Lake, *13073;* shallows of lake west of New Boston, *12949*. Annapolis County: marginal shallows of Liverpool Head Lake *11879*. Digby County: locally abundant in shallows of Midway Lake, Centerville, *11849*. Shelburne County: marginal shallows of Greenwood Lake, Port Saxon, *12186*. Guysborough County: marginal shallows of Grant Lake, *13158;* occasional in marginal water of lake at Lakedale, *13157*.

Megaladonta Beckii (Torr.) Greene. Fernald (1922) first reported this water plant from the province where he found it growing in a deadwater of Rocky Brook, north of Hassett, Digby County. Since then Roland (1938) reported the plant as abundant in the water of the Southwest Margaree River at the outlet from Lake Ainslie, Inverness County, and Schofield (1955) in wrack of Mattatall Lake, Colchester County. To these have now been added some ten additional

stations (Fig. 8) which show the distribution of this species, as presently known, to be concentrated in the northeastern portion of the province, in the less acid areas. It is particularly abundant in Inverness County in the slow flowing streams about Lake Ainslie, and in ponds to the north in this county. Here the collection at Friar's Head represents the northeastern extension of its range. In only two cases has it been found in flower. Inverness County: occasional in water of Hays River, West Lake Ainslie, *6959;* abundant in water of pond near Friar's Head, *10270;* in water of river lagoon, Margaree, *10303*. Cape Breton County: rare, lagoon of Black Brook Lake, *12965;* abundant in water of Blacketts Lake, *12988*. Antigonish County: in water of Cameron Lake, Pinevale, *13147*. Pictou County: in water of Grant Lake, *J. S. Erskine 55.1221;* common, Black River Lake, West River St. Mary's, *13346;* rare in wrack, Grant Lake, northeast of Elgin, *12831*. Colchester County: small quiet area of Gay River, Gay River Village, *12672;* ox-bow of Stewiacke River, Landor, *12692*. Halifax County: abundant in water of Musquodoboit River at Brandy Spring, *9301*.

Material substantiating the majority of these records has been deposited in the Acadia University Herbarium. — PERRY BIOLOGICAL LABORATORIES, ACADIA UNIVERSITY, WOLFVILLE, NOVA SCOTIA.

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